Epitomes

Important Advances in Clinical Medicine

Orthopedics

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The Council on Scientific Affairs of the California Medical Association presents the following epitomes of progress in orthopedics. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and clinical importance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, and scholars to stay abreast of progress in medicine, whether in their own field of special interest or another.

The epitomes included here were selected by the Advisory Panel to the Section on Orthopedics of the California Medical Association, and the summaries were prepared under the direction of David B. Thordarson, MD, and the panel.

Orthopedic Implications of Tuberculosis

TUBERCULOSIS IS undergoing a resurgence in the United States, associated with the acquired immunodeficiency syndrome (AIDS) epidemic, the influx of immigrants from underdeveloped parts of the world, and perhaps some increased complacency in the medical community. About 15% of cases of infection with *Mycobacterium tuberculosis* are extrapulmonary, and of these, 9% to 10% involve the bones and joints. In the vast majority of cases, the organism is delivered to the skeletal system during lymphohematogenous dissemination from a pulmonary focus. The organism may lie dormant in the skeletal system for long periods after the initial dissemination before disease is detected and typically progresses from a focus in the epiphyseal region of the bone, where it may produce either chronic arthritis or osteomyelitis.

Tuberculous arthritis typically occurs as chronic monarthric (monoarticular) arthritis. The infection is slowly progressive. The knees, hips, ankles, and wrists are most often involved. Pain and swelling are common features of this form of arthritis, and years may pass before a diagnosis is established. Biopsy of the synovium will typically yield granulomas. Aspiration with the appropriate stain and culture is always necessary, but the initiation of treatment often requires a high index of suspicion, a positive tuberculin skin test, and sometimes a characteristic appearance on synovial biopsy. A positive smear culture is always a reassuring confirmation of the diagnosis.

Therapy now relies on the use of a four-drug combination for sensitive stains of *M tuberculosis*, at least for the first two months, followed by prolonged treatment with isoniazid and rifampin. Treatment durations of at least a year seem appropriate. Surgical debridement is unnecessary in all but advanced cases; results are excellent if the disease has not progressed. Advanced degrees of joint destruction before therapy is started lead to a poor prognosis.

Tuberculous osteomyelitis most commonly involves the spine (vertebral osteomyelitis or Pott's disease). The disease typically involves the intervertebral disc, leading to destruction of the disc and anterior wedging. The thoracic spine is most commonly involved, followed by the lumbar area. Pus may form and dissect into the neck, groin, buttocks, or other areas, and large paraspinous abscesses may occur. Characteristic roentgenographic changes can be seen with destruction of the disc space and bony erosion. Neurologic impairment and damage may occur if caseous or granulomatous material impinges on the cord.

The diagnosis is established through a bone biopsy and culture, either with a needle or with open surgical intervention. Treatment is again largely medical, although surgical treatment may be required to relieve pressure on the cord in patients with neurologic impairment or to stabilize bone. In general, paraspinous abscesses do not require drainage if they are tuberculous in origin and not associated with signs of neurologic compromise. Treatment should be extended for as long as two years. The results of therapy should be excellent if the disease is diagnosed early.

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Bone Graft Substitutes

BONE GRAFTING is commonly used to augment bone repair, with several approaches to reconstructing or replacing musculoskeletal defects. The autogenous grafts can be cancellous, nonvascularized cortical, or vascularized cortical. Because these grafts are associated with